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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,286	01/27/2006	Dong Hwal Lee	2017-064	5514
52706	7590	06/27/2007		
IPLA P.A. 3580 WILSHIRE BLVD. 17TH FLOOR LOS ANGELES, CA 90010			EXAMINER BOR, HELENE CATHERINE	
			ART UNIT 3768	PAPER NUMBER
			MAIL DATE 06/27/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/566,286	Applicant(s) LEE ET AL.	
	Examiner Helene Bor	Art Unit 3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 January 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>01/27/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Specification

2. The disclosure is objected to because of the following informalities: Improper headings and arrangement of the specification.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.

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- (1) Field of the Invention.
- (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

Appropriate correction is required.

3. The disclosure is objected to because of the following informalities: Page 1, Para 3 ~ "enabled Furthermore" should be "enabled. Furthermore".

Appropriate correction is required.

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Page 3, Para 12-14 ~ Figure 2 & Figure 2, Elements 20, 30 & 40 and Page 7, Para 34 ~ Figure 4a. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to because Figure 6 does not have reference labels to correspond to elements in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

6. Claim 2 is objected to because of the following informalities: "the waveform" lacks antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claim 1-2 & 5-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Hayashi'566 (US Patent Application No. 2004/0021566 A1).

Claim 1: Hayashi'566 teaches a distance measurement method using ultrasonic (Abstract). Hayashi'566 teaches transmitting an ultrasonic pulse having specific frequencies to each object (Figure 18, Element 21). Hayashi'566 teaches receiving the ultrasonic pulse that is reflected from the object or directly transmitted (Figure 18, Element 31). Hayashi'566 teaches extracting a specific frequency of the received ultrasonic wave pulse to find an arrival time of a first pulse and converting the time into a distance (Page 11, Para 0169).

Claim 2/1: Hayashi'566 teaches a distance measurement method, wherein the step of finding the arrival time and converting the time into the distance further includes the step of separating a specific frequency of the ultrasonic and converting an arrival time of an ultrasonic that is received for the first time among the separated ultrasonic into the distance, in a state where the waveform is mixed with noise having different frequency properties from the specific frequency of the transmitted ultrasonic (Figure 19, S234 & Claim 1).

Claim 5/1: Hayashi'566 teaches a distance measurement method, wherein the step of receiving the ultrasonic reflected from the object while the object is moving

comprises changing a received frequency depending on variation of the frequency of the transmitted ultrasonic (Page 3, Para 0038).

Claim 6: Hayashi'566 teaches distance measurement method using ultrasonic (abstract). Hayashi'566 teaches installing a first receiver for receiving an ultrasonic at a known position (Figure 17, Element 31a). Hayashi'566 teaches installing a second receiver for receiving an ultrasonic at an object to be measured (Figure 17, Element 31b). Hayashi'566 teaches transmitting an ultrasonic having a specific frequency from a location where a distance from the object will be measured, to the first and second receivers (Page 11, Para 172-173). Hayashi'566 teaches extracting specific frequencies of the ultrasonic received from the first and second receivers to find an arrival time of a first signal and converting the time into a distance (Page 11, Para 168-169). Hayashi'566 teaches transmitting error information related to a difference between the distance received by the first receiver and the known distance to the second receiver; and allowing the second receiver to correct the velocity of sound using the error information (Page 11, Para 178-179 & Page 12, Para 0194).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claim 3-4 & 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi'566 (US Patent Application No. 2004/0021566 A1) and further in view of Hirose'162 (US Patent No. 6,672,162 B2).

Claim 3/1: Hayashi'566 teaches a distance measurement method for converting the time into the distance (Page 12, Para 194) and the extraction of the specific frequency from the received ultrasonic (Page 11, Para 0169). Hayashi'566 teaches extracting a specific frequency from the converted digital signal through a digital signal processing (Page 11, Para 0169). Hayashi'566 fails to teach the details of amplifying and filtering of the signal. However, Hirose'162 teaches amplifying the received ultrasonic to generate an amplified signal (Figure 1, 4a). Hirose'162 teaches weakening a signal of an unnecessary frequency among the amplified signal through an analog filter circuit to generate a filtered signal (Figure 1, 4b). Hirose'162 teaches amplifying the filtered signal again to generate a re-amplified signal and converting the re-amplified signal into a digital signal (Figure 1, 4c, 4e, & 4f & Col. 3, Line 66 – Col. 4, Line 6). It would have been obvious to one of ordinary skill in the art to combine the

teachings of Hayashi'566 and Hirose'162 in order to decrease processing time and increase processing speed (Col. 4, Line 6-15).

Claim 4/3/1: Hayashi'566 teaches a distance measurement method, further comprising the step of specifying a distance range to be excluded when measuring a distance of the object, such that a distance exceeding the specified distance range is measured (Page 11, Para 0176).

Claim 7: Hayashi'566 teaches a distance measurement device using ultrasonic (Abstract). Hayashi'566 teaches a transmitter for generating an ultrasonic having a specific frequency (Figure 21, Element 23). Hayashi'566 teaches a sensor for detecting the ultrasonic reflected from an object (Figure 21, Element 33). Hayashi'566 teaches a digital signal processor for processing the digital data stored in the memory (Figure 21, Element 32). Hayashi'566 teaches an output unit (Figure 20, Element 3a) for displaying results processed in the digital signal processor. Hayashi'566 teaches a numerical input unit for informing the digital signal processor of a processing condition (Figure 20, Element 3a). Hayashi'566 teaches a communication unit (Figure 20, Element 2) for connecting the digital signal processor (Figure 21, Element 32) and an external apparatus (Figure 20, Element 12) to each other so that the digital signal processor and the external apparatus can exchange information. Hayashi'566 teaches a transmission time of a first signal among the received ultrasonic and a delayed time of an arrival time of the first signal calculated in the digital signal processor are measured (Page 12, Para 0193-194). Hayashi'566 fails to teach the details of amplifying and filtering of the signal. However, Hirose'162 teaches an amplifier for amplifying the ultrasonic detected by the

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sensor (Figure 1, Element 4a). Hirose'162 teaches an analog filter for selectively attenuating other frequencies except for a specific frequency from the ultrasonic amplified by the amplifier (Figure 1, 4b). Hirose'162 teaches a secondary amplifier for amplifying an analog signal selected through the analog filter (Figure 1, Element 4d & 4f & Col. 3, Line 66 – Col. 4, Line 6). Hirose'162 teaches an A/D converter for converting the amplified analog signal to a digital data (Figure 1, Element 4c) and a memory for storing the digital data therein (Figure 1, Element 4e). It would have been obvious to one of ordinary skill in the art to combine the teachings of Hayashi'566 and Hirose'162 in order to decrease processing time and increase processing speed (Col. 4, Line 6-15).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- a. Couch, Philip R. et al. Analysis of ultrasonic reflections to measure distance, 04/21/2005. US 20050086013 A1.
- b. Demas; James G. et al. Distance measuring system, 03/12/1996. US 5499199 A.
- c. Demyun; Stephen M. et al. Ultrasonic method and apparatus for measuring the periodontal pocket, 03/31/1992. US 5100318 A.
- d. Foxlin; Eric et al. Range measuring system , 11/06/2001. US 6314055 B1.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helene Bor whose telephone number is 571-272-2947. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eleni Mantis-Mercader can be reached on 571-272-4740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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